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AUTHOR Thomas, M. Carolyn
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ABSTRACT

The hypothesis that a major cause of college students' low scores on standardized tests is underpreparedness was supported by data collected at Alabama State University where a freshman survey revealed that approximately 89% of the sample had not taken the college preparation program in high school. Four sessions of test-taking skills were provided for 35 students preparing for the Business Test of the Undergraduate Assessment Program. These students' test scores were compared with scores of students who had not attended the sessions. While the treatment group performed better than the control group, the results indicated a need for further research. Students seeking help to increase their ACT scores to 16 received a comprehensive program involving: (1) careful diagnosis of deficiencies; (2) recommendation of an individualized plan of action; (3) referrals to the appropriate courses and laboratories; (4) advisor and counselor evaluation conferences; and (5) test-taking training groups. Of the 23 students who completed the recommended remediation, over 90% achieved the 16 or greater score on the ACT. The method was judged to be effective. Test-taking training was found to be effective when combined with remediation in content and skills areas. The greatest problem in increasing test scores was found to be the unwillingness of students to take additional courses or to spend time in laboratories to increase preparedness. These findings suggest several recommendations for both high school and college personnel. (NB)

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Effective Methods for Increasing Scores on Standardized Tests

M. Carolyn Thomas

School of Education

Auburn University at Montgomery

CG 019294

M. Carolyn Thomas is associate professor, Department of Foundations, Secondary and Counselor Education, Auburn University at Montgomery. She conducted this research while serving as Director of University Counseling Services at Alabama State University, Montgomery.

Running head: EFFECTIVE METHODS FOR INCREASING SCORES

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Abstract

Increasing scores on standardized tests is most effectively accomplished by combining test taking training with procedures for eliminating areas of underpreparedness. Test-taking training alone is not effective because the major cause of low scores on standardized tests is failure to take the courses including the skills and content measured by the tests.

Effective Methods for Increasing Scores on Standardized Tests

Student requests at the Alabama State University Counseling Center for help to improve performance on standardized tests increased sharply during the period 1978-1983. The increase was a result of new entrance requirements for teacher education programs, exit comprehensive examinations for several major areas of study and publicity about performance of minority students on standardized tests. For example, the Alabama Department of Education initiated a requirement that students entering teacher education programs must obtain a 16 on the American College Test (ACT) prior to enrollment in professional courses. Some students requesting help in the Counseling Center were simply not satisfied with their scores, and others needed certain scores to be accepted into graduate and armed services programs or to qualify for jobs. Consequently, several methods for increasing student performance on standardized tests were developed and offered between 1978 and 1983 by the Alabama State University Counseling Center staff.

Causes of Low Scores

Clayton (1979) hypothesized that the major cause of college students' low scores on standardized tests was underpreparedness. Data were collected for Freshmen in several Historically Black

Colleges. Eighty-two percent of the students reported that they had planned to attend a four year college when they took the ACT in high school. However, only 35 percent of the students reported they had taken a college preparatory curriculum in high school. Fewer than one-half of the students had taken three years of either Mathematics or Science and only one-fourth of the students had taken four years of Social Studies.

The ACT samples content generally included in college preparatory courses. For example, 85 percent of the ACT Mathematics Usage Test includes content from Algebra I, Algebra II and Geometry (Content of the Tests in the ACT Assessment, 1977). High school students who take only two science courses are exposed to approximately 50 percent of the content on the ACT Natural Sciences Reading Test. Similarly, students who do not take History, Government and Economics do not get exposure to nearly one-half of the content in the ACT Social Studies Reading Test. Since only 35 percent of the college Freshmen at the Historically Black Colleges sampled in the Clayton (1979) study had taken a college preparatory curriculum, the average 1977-78 composite ACT score for the minority Freshmen was 10.3. The lowest mean scores were in Mathematics Usage (8.9) and Social Studies Reading (8.8) which were the areas in which the Freshmen in Historically Black

Colleges were least prepared because they took the fewest high school courses. Consequently, high school students should complete a college preparatory curriculum in order to be exposed to sufficient content on the ACT to obtain a high or average score.

Data collected at Alabama State University supported Clayton's hypothesis. Random samples of students in the 1980-81 and 1981-82 Freshmen Orientation classes at Alabama State University were surveyed, with findings that approximately 89 percent of the Freshmen had not taken the college preparatory program in high school (Thomas, 1982). In addition, test scores were compiled for students who requested help in 1982-83 from the Alabama State University Counseling Center to increase their ACT scores to 16. High school ACT scores, Nelson-Denny Reading Test Form D scores and Mathematical Computation scores on the California Achievement Test-16C were obtained for each student. The mean scores are contained in Table 1.

Insert Table 1 about here

The mean composite ACT score for the students seeking help was 9.13. As in Clayton's 1979 sample, the lowest ACT scores were in Mathematics Usage (6.95) and Social Studies Reading (7.57).

The average grade level reading score was below the 11th grade level. Finally, the average student missed more than one-fourth of the basic computational mathematics problems. Problems involving fractions, decimals and division were most frequently missed.

Data in Table 2 may be used to emphasize the severity of the reading level effect on the ACT scores. Numbers and percentages of students who scored in specific grade level ranges are included.

Insert Table 2 about here

More than one-half (53.8%) of the students who sought help to obtain a 16 on the ACT did not achieve high school level reading scores on the comprehension portion of the Nelson-Denny Reading Test. Fewer than one-third of the students achieved Comprehension scores at or above the 11.0 grade level.

This evidence seems adequate to attribute low scores on the ACT to not taking the college preparatory curriculum in high school and to inadequate reading skills. Taking only the basic requirements for high school graduation is apparently not sufficient for achieving average or high scores on the ACT.

Method I: Increasing Scores by Teaching Test-Taking Skills

Four sessions of test-taking skills were provided in 1981-82 for 35 students who requested help to prepare for the Business

Test of the Undergraduate Assessment Program (UAP). The sessions involved (a) teaching test-taking skills, (b) taking tests under supervision to practice test-taking skills, and (c) identification of deficient areas. The sessions consisted of four two-hour weekly periods. Test-taking skills were taught during the first session (Thomas, 1979; Test Wiseness: Test-Taking Skills for Adults, 1978). Practice tests similar to the UAP Business Test were administered in subsequent sessions to improve the test taking skills and identify content for independent study. Students were encouraged to seek tutoring, get help from teachers, study old notes and texts and study in groups. No follow-up or individual recommendations were made. Some students attended all four sessions, others attended three, two or only one session.

The scores of the students who took the examination in April, 1982 and who had attended one, two, three or four sessions of test preparation were compared with the scores of a random sample of students who did not attend the sessions. A t-test for independent groups was used. Table 3 contains the data.

Insert Table 3 about here

The group with treatment did not perform better than the group who received no help. Of course, the treatment group was

self-selected and not randomly selected. Also, the students who sought help were probably less prepared students who may have made much higher scores than they might have if they had not received the help. The results indicate a need for further research. A pre-test might be administered and matched pairs should be used, one group receiving help and one not receiving help.

Method II: Increasing Scores by Improving Preparation and Skills in Content Areas

During the 1982-83 academic year, 78 students received help in the Alabama State University Counseling Center to increase their ACT scores to 16. Since merely teaching test-taking skills had not been effective (Thomas, 1982), a more comprehensive approach was implemented. The approach included:

1. Careful diagnosis of deficiencies. The Nelson-Denny Reading Test and Mathematical Computation subtest of the California Achievement Test-16C were used to identify basic skills deficiencies in reading and basic computation. Previous ACT scores, high school transcripts and college advisement records were examined to find connections between low scores on ACT subtests and courses not taken in high school or college.

2. Recommendation of an individualized plan of action. The counselor studied each student's scores and curricula and wrote

recommendations for increasing preparedness. The scores and recommendations were discussed with each student so that the student had the opportunity to share feelings and ask questions. Permission to give the scores and recommendations to the advisor was obtained. The counselor, advisor and student received a written copy of the individualized plan.

3. Referrals to the appropriate courses and laboratories. Referrals were made according to the individualized plan of action. For example, students who did not achieve scores at the 11.0 grade reading level were referred to the appropriate reading course. A student with low mathematics computation scores was referred to the Mathematics Laboratory. After the basic skills were improved, the student was referred to the appropriate course. Students were not referred to content courses until the reading and computation skills were improved. Low scores on the ACT Social Studies Reading Test often seemed to result from low reading levels rather than not having taken history courses. Teachers and laboratory directors were contacted initially and during follow-up to carefully monitor student progress.

4. Advisor and counselor evaluation conferences. The advisor and counselor talked prior to pre-registration each quarter to revise each student's plan of action. If the student

had increased the reading score to the 11.0 grade level, then the counselor recommended placement in appropriate content courses. The counselor often re-tested students to obtain current skills levels. Advisors did not sign a schedule request form until updated recommendations were made.

5. Test taking training groups. When the counselor predicted the student was within one quarter of being sufficiently prepared to take the ACT, the student was referred to an ongoing two-hour per week training group. Test-taking skills (Thomas, 1979), practice taking tests similar to the ACT under supervision and tutoring were included in the sessions. The occasional student with test anxiety was taught relaxation and systematic desensitization.

Results

Twenty-three students completed the recommended remediation by the end of the 1982-83 academic year. More than 90 percent of the 23 students who completed the entire recommended plan of action achieved the 16 or greater score on the ACT. Only two students who completed the plan of action did not achieve at least a 16 on the ACT. The methodology was effective.

Thirty students followed just one or a few recommendations, took the ACT a second time and achieved higher scores, but not one

of the students achieved the 16 score. Many of these students are currently completing the remainder of the recommended program before another ACT attempt.

The remaining 25 students were unwilling to take the extra courses. Follow-up revealed that ten students had changed their majors and 15 students had bypassed their advisor to avoid the courses.

Discussion and Summary

Increasing scores on standardized tests by teaching test-taking skills only has proven not to be effective. The most effective strategy seems to be sufficiently improving preparedness in every content and skill area measured by the standardized test, and providing training in test-taking skills as an added preparatory step. Test-taking training was thus found to be effective when combined with remediation in content and skills areas.

The greatest problem in increasing test scores was found to be the unwillingness of students to take additional courses or spend time in laboratories to increase preparedness.

Recommendations

Several recommendations can be made from the results of data

collected in this study:

1. Any high school student intending to attend a four year college should be strongly encouraged to take a college preparatory curriculum.

2. High school counselors should involve parents in persuading students to take a college preparatory curriculum if the students intend to attend a four year college.

3. High school counselors should increase the awareness of teachers, principals and superintendents to the effects of going to college without having taken a college preparatory curriculum.

4. Superintendents, principals and Boards of Education should intensify their efforts to employ adequate numbers of Mathematics and Science teachers.

5. High school counselors should make added efforts to identify areas of underpreparedness in students and to use the methods in this study to improve preparedness.

6. College admissions staff should initiate procedures to identify students coming to college with inadequate preparation and immediately refer them to the appropriate campus program.

7. All high school and college personnel should cooperate in encouraging students who may be underprepared in a few or several skill and content areas to adopt a positive attitude and an active

approach to improving their preparation. Cooperative efforts might lead to discovery of incentives powerful enough to get higher participation in programs designed to increase scores on standardized tests.

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Table 1

Mean Scores of Students Requesting Help to Obtain a 16 on the ACT in 1982-1983

Test	Mean Score
ACT (N = 45)	
English Usage	10.06
Mathematics Usage	6.95
Social Studies Reading	7.57
Natural Science Reading	11.00
Composite	9.13
Nelson Denny Reading Test[a] (N = 77)	
Vocabulary	10.05
Comprehension	9.20
Total	9.36
California Achievement Test 16C[b] (N = 77)	
Mathematics Computation	29.17

[a] Scores given in grade level equivalency. [b] Average raw score is the number of correct responses out of 40 basic computational questions.

Table 2

Numbers and Percentages of Students Scoring in Specific Grade Level Ranges on the Nelson-Denny Reading Test-D

	Grade Levels							
	Below 9.0		9.0-10.9		11.0-11.9		12.0 & Above	
Test	N	%	N	%	N	%	N	%
Vocabulary	31	39.7	17	21.8	9	11.5	21	27.0
Comprehension	42	53.8	13	16.7	5	6.4	18	23.1
Total	37	47.4	17	21.8	7	9.0	17	21.8

Note. N = 78 for all tests.

Table 3

Comparison of Mean Scores on the Undergraduate Assessment Program Business Test With and Without Test Taking Skills Training

Group	Mean Score on Exam	Number of Students	t
Without Training	290.85	35	
With Training	297.14	35	.37

Note. A t value (df = 68) of 2.00 is required for the .05 level of significance.